

synchronization. For example, the frame-synchronizing signal is a signal indicating the head of a display frame. The liquid crystal display drive and control device feeds the host module with the frame-synchronizing signal, whereupon the host module becomes capable of feeding the display data, and so forth to the liquid crystal display drive and control device, in synchronization with the frame-synchronizing signal. At this point in time, in the operation mode of using the first serial interface circuit as the interface with the host module, the host interface circuit enables the frame-synchronizing signal ((FLM (sub)) inputted from the outside to be outputted from the frame-synchronizing signal output terminal to the host module when image information received by the first serial interface circuit can be outputted from the parallel interface circuit to the outside. As a result, when the liquid crystal display drive and control device feeds the display data from the parallel interface circuit to the sub liquid crystal display drive and control device, the sub liquid crystal display drive and control device is capable of fetching the display data in synchronization with the head of a frame.

(2) [Serial Communications]

**[0022]** A liquid crystal display drive and control device comprises a host interface circuit usable for connection with a host module, and a drive circuit. The drive circuit generates a drive signal for driving a liquid crystal display on the basis of information inputted to the host interface circuit before outputting. The host interface circuit comprises a first serial interface circuit to be interfaced with the host module, and a second serial interface circuit (40) differing in communication speed from the first serial interface circuit. The first serial interface circuit comprises differential terminals for input/output of serial data. With the first serial interface circuit for inputting/outputting the serial data in a differential method, it is possible to execute high-speed serial interfacing at low amplitude. Adoption of the first serial interface will result in further reduction in the number of signal lines for use in interfacing with the host module.

**[0023]** According to a specific mode of the invention, the liquid crystal display drive and control device preferably further comprises a mode terminal (IM 3-0) for determining which of the first serial interface circuit and the second serial interface circuit is to be used as an interface with the host module.

**[0024]** According to another specific mode of the invention, the host interface circuit preferably further comprises a parallel interface circuit. In this case, the host interface circuit preferably further comprises a mode terminal for determining which of the first serial interface circuit, the second serial interface circuit, and the parallel interface circuit is to be used as an interface with the host module. If the host module is in support of low-amplitude high-speed serial interfacing by the first serial interface circuit, adoption of the first serial interface will result in further reduction in the number of signal lines for use in interfacing with the host module. In the case where the host module is not in support of the low-amplitude high-speed serial interfacing by the first serial interface circuit, selection of the conventional parallel interface or the second serial interface circuit will suffice, so that it is possible to ensure flexibility of the system configuration.

**[0025]** According to still another specific mode of the invention, in an operation mode of using the first serial

interface circuit as the interface with the host module, the host interface circuit enables information received by the first serial interface circuit to be outputted from the parallel interface circuit to outside. In the case where a different liquid crystal display driver for a sub-display is connected to the outside, the liquid crystal display drive and control device is capable of causing the parallel interface circuit to perform outputting of display data to the different liquid crystal display driver.

**[0026]** According to a further specific mode of the invention, the host interface circuit preferably further comprises a frame-synchronizing signal output terminal capable of outputting a frame-synchronizing signal for instructing timing for fetching the display data by frame synchronization. For example, the frame-synchronizing signal is the signal indicating the head of the display frame. The sub liquid crystal display drive and control device feeds the host module with the frame-synchronizing signal, whereupon the host module becomes capable of feeding the display data, and so forth to the sub liquid crystal display drive and control device, in synchronization with the frame-synchronizing signal. At this point in time, in the operation mode of using the first serial interface circuit as the interface with the host module, the host interface circuit enables the frame-synchronizing signal inputted from the outside to be outputted from the frame-synchronizing signal output terminal to the host module when image information received by the first serial interface circuit can be outputted from the parallel interface circuit to the outside. As a result, when the liquid crystal display drive and control device feeds the display data from the parallel interface circuit to the sub liquid crystal display drive and control device, the sub liquid crystal display drive and control device is capable of fetching the display data in synchronization with the head of the frame.

(3) [Mobile Terminal System]

**[0027]** A mobile terminal system comprises a liquid crystal display drive and control device (10), and a host module (5), having a plurality of signal lines (18) interconnecting the liquid crystal display drive and control device and the host module. Parts of the signal lines serve as differential signal lines through which information transmission is executed by serial interfacing. High-speed serial interfacing low in amplitude can be executed by the liquid crystal display drive and control device, and the host module by making use of the differential signal lines. Hence, a necessary transfer rate can be obtained even with a fewer number of the signal lines in comparison with the number of bus signal lines used for executing parallel interfacing.

**[0028]** According to a specific mode of the invention, the mobile terminal system preferably comprises a first case (15), and a second case (17) joined with the first case in such a way as to be folded and unfolded with a hinge (16) interposed therebetween. The first case preferably comprises a liquid crystal display drive and control device, and a liquid crystal display (11) driven thereby. The second case preferably comprises the host module. The plurality of signal lines run through the hinge. Because the number of the signal lines can be reduced, it is possible to significantly reduce the risk of the signal lines 18 being broken over time due to repeated folding and bending operations at the hinge 16.

**[0029]** According to another specific mode of the invention, the number of interconnections as the signal lines is